

WHAT IS CLAIMED IS:

1. 1. A login method comprising
2. processing a login token, if provided, during a login attempt, wherein the login
3. attempt is impermissible, and thus unsuccessful, if the login attempt occurs before expiration
4. of a first period of time following an unsuccessful login attempt associated with said login
5. token; and
6. providing an updated login token in response to the login attempt, wherein the
7. updated login token does not permit a subsequent login attempt before expiration of a second
8. period of time if the login attempt is unsuccessful.

1. 2. The login method of claim 1, further comprising
2. maintaining a login-attempt success indicator, said login-attempt success indicator
3. indicating whether the login attempt is successful, said login-attempt success indicator being
4. referenced during the subsequent login attempt

1. 3. The login method of claim 2, further comprising
2. including in the updated login token an attempt success indicator, said attempt success
3. indicator indicating whether the login attempt is successful, said attempt success indicator
4. being referenced during the subsequent login attempt.

1. 4. The login method of claim 3, wherein
2. the login-attempt success indicator is a login class, wherein the login class is first-
3. class if the login attempt is successful.

1. 5. The login method of claim 1, further comprising
2. maintaining a time stamp, said time stamp corresponding to the second period of time.

1. 6. The login method of claim 1, further comprising
2. inserting in the updated login token a time stamp, said time stamp corresponding to
3. the second period of time.

- 1 7. The login method of claim 1, further comprising
2 maintaining an account identifier, said account identifier corresponding to an account
3 that is the subject of the login attempt, wherein the subsequent login attempt is impermissible
4 if an account that is the subject of the subsequent login attempt does not correspond to the
5 account identifier.
- 1 8. The login method of claim 1, further comprising
2 inserting in the updated login token an account identifier, said account identifier
3 corresponding to an account that is the subject of the login attempt, wherein the subsequent
4 login attempt is impermissible if an account that is the subject of the subsequent login attempt
5 does not correspond to the account identifier.
- 1 9. The login method of claim 1, further comprising
2 maintaining a network address identifier, said network address identifier
3 corresponding to a network address from which the login attempt originates, wherein the
4 subsequent login attempt is impermissible if a network address from which the subsequent
5 login attempt originates does not correspond to the network address identifier.
- 1 10. The login method of claim 1, further comprising
2 inserting in the updated login token a network address identifier, said network address
3 identifier corresponding to a network address from which the login attempt originates,
4 wherein the subsequent login attempt is impermissible if a network address from which the
5 subsequent login attempt originates does not correspond to the network address identifier.
- 1 11. The login method of claim 1, further comprising
2 maintaining a password identifier, said password identifier corresponding to a
3 password submitted with the login attempt, wherein the subsequent login attempt is
4 impermissible if a password submitted with the subsequent login attempt does not correspond
5 to the password identifier.
- 1 12. The login method of claim 1, further comprising

2 inserting in the updated login token a password identifier, said password identifier
3 corresponding to a password submitted with the login attempt, wherein the subsequent login
4 attempt is impermissible if a password submitted with the subsequent login attempt does not
5 correspond to the password identifier.

1 13. The login method of claim 1, further comprising
2 inserting in the updated login token a validity stamp, said validity stamp designed to
3 prevent the use of an invalid login token, wherein the login attempt is impermissible if the
4 login token does not include a valid validity stamp.

1 14. The login method of claim 1, further comprising
2 inserting in the updated login token a nonce, said nonce designed to prevent the reuse
3 of an otherwise valid login token, wherein the login attempt is impermissible if the login
4 token does include a nonce used in a prior login attempt.

1 15. The login method of claim 1, further comprising
2 maintaining a count of unsuccessful login attempts.

1 16. The login method of claim 15, further comprising
2 incrementing the count if the login attempt is impermissible.

1 17. The login method of claim 15, further comprising
2 incrementing the count if the login attempt is permissible but otherwise unsuccessful.

1 18. The login method of claim 15, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined
4 threshold.

1 19. The login method of claim 15, further comprising

2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 within a third period of time.

1 20. The login method of claim 1, wherein
2 the login attempt is impermissible if the login token is not provided during the login
3 attempt.

1 21. The login method of claim 1, further comprising
2 maintaining a count of unsuccessful login attempts to login with a password.

1 22. The login method of claim 21, further comprising
2 incrementing the count if the login attempt is impermissible and is made with the
3 password.

1 23. The login method of claim 21, further comprising
2 incrementing the count if the login attempt is permissible but otherwise unsuccessful
3 and is made with the password.

1 24. The login method of claim 21, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 and the login attempt is made with the password.

1 25. The login method of claim 21, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 within a third period of time and the login attempt is made with the password.

1 26. The login method of claim 21, wherein

2 the second period of time is not increased as the count increases unless each of the
3 defined number of unsuccessful login attempts to login with the password occur within a
4 third period of time.

1 27. The login method of claim 21, further comprising
2 invalidating the subsequent login attempt if the count equals a predefined threshold
3 and the password is submitted with the subsequent login attempt.

1 28. The login method of claim 1, further comprising
2 maintaining a count of unsuccessful login attempts to login with a user name.

1 29. The login method of claim 28, further comprising
2 incrementing the count if the login attempt is impermissible.

1 30. The login method of claim 28, further comprising
2 incrementing the count if the login attempt is permissible but otherwise unsuccessful.

1 31. The login method of claim 28, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 and the login attempt is made with the user name.

1 32. The login method of claim 28, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 within a third period of time and the login attempt is made with the user name.

1 33. The login method of claim 28, wherein
2 the second period of time is not increased as the count increases unless each of the
3 defined number of unsuccessful login attempts to login with the user name occur within a
4 third period of time.

1 34. The login method of claim 28, further comprising
2 invalidating the subsequent login attempt if the count equals a predefined threshold
3 and the user name is submitted with the subsequent login attempt.

1 35. The login method of claim 1, further comprising
2 maintaining a count of unsuccessful login attempts to login from a network address.

1 36. The login method of claim 35, further comprising
2 incrementing the count if the login attempt is impermissible and made from the
3 network address.

1 37. The login method of claim 35, further comprising
2 incrementing the count if the login attempt is permissible but otherwise unsuccessful
3 and made from the network address.

1 38. The login method of claim 35, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 and the login attempt is made from the network address.

1 39. The login method of claim 35, further comprising
2 selecting the second period of time by reference to the count, wherein the second
3 period of time is longer than it otherwise would be if the count reaches a predefined threshold
4 within a third period of time and the login attempt is made from the network address.

1 40. The login method of claim 35, wherein
2 the second period of time is not increased as the count increases unless each of the
3 defined number of unsuccessful login attempts to login from the network address occur
4 within a third period of time.

1 41. The login method of claim 35, further comprising

2 invalidating the subsequent login attempt if the count equals a predefined threshold
3 and the subsequent login attempt is made from the network address.

1 42. The login method of claim 1, wherein
2 the second period of time is a first length if the login attempt is one in a series of
3 unsuccessful login attempts associated with the login token, which follow a successful
4 attempt associated with the login token, if the series of unsuccessful login attempts does not
5 include more than a predefined number unsuccessful login attempts;
6 the second period of time is a second length if the login attempt is one in a series of
7 unsuccessful login attempts associated with the login token, which follow a successful
8 attempt associated with the login token, if the series of unsuccessful login attempts includes
9 the predefined number unsuccessful login attempts;
10 the second period of time is a third length if the login attempt does not follow a
11 successful attempt associated with the login token, said third length exceeding the first
12 length; and
13 the second period of time is a fourth length if the login token is not provided during
14 the login attempt, said fourth length exceeding the first length.

1 43. The login method of claim 1, further comprising
2 processing a second login token, if provided, during a second login attempt, wherein
3 the login cookie provided in response to the second login attempt does not permit a
4 subsequent login attempt at least until the second period of time has expired twice since the
5 login attempt.

1 44. A login method comprising
2 processing a login attempt to determine whether the login attempt is successful, said
3 login attempt being successful if permissible and submitted with a valid user name and
4 password combination;
5 providing a first-class login token if the login attempt is successful, said first-class
6 login token permitting a predefined number of unsuccessful login attempts without imposing
7 more than a first time delay between each of said unsuccessful login attempts;

8 providing a second-class login token if the login attempt is unsuccessful and a login
9 token submitted with the login request is second-class, wherein a subsequent login attempt
10 made with said second-class login token is not permissible if submitted prior to expiration of
11 a second time delay, said second time delay exceeding said first time delay;

12 providing the second-class login token if the login attempt is unsuccessful and is the
13 last of a series of unsuccessful login attempts associated with a first-class login token, said
14 series including more than the predefined number of unsuccessful login attempts; and

15 providing the second-class login token if a login token is not submitted with the login
16 attempt, said login attempt not being permissible.

1 45. The login method of claim 44, wherein
2 the login attempt is not permissible if a login token submitted with said login attempt
3 is invalid.

1 46. The login method of claim 44, wherein
2 the login attempt is not permissible if said login attempt is made prior to expiration of
3 a time delay associated with a login token submitted with said login attempt.

1 47. A computer program product for use in conjunction with a computer system, the
2 computer program product comprising a computer readable storage medium and a computer
3 program mechanism embedded therein, the computer program mechanism comprising:

4 instructions for processing a login attempt to determine whether the login attempt is
5 successful, said login attempt being successful if permissible and submitted with a valid user
6 name and password combination;

7 instructions for providing a first-class login token if the login attempt is successful,
8 said first-class login token permitting a predefined number of unsuccessful login attempts
9 without imposing more than a first time delay between each of said unsuccessful login
10 attempts;

11 instructions for providing a second-class login token if the login attempt is
12 unsuccessful and a login token submitted with the login request is second-class, wherein a
13 subsequent login attempt made with said second-class login token is not permissible if

14 submitted prior to expiration of a second time delay, said second time delay exceeding said
15 first time delay;

16 instructions for providing the second-class login token if the login attempt is
17 unsuccessful and is the last of a series of unsuccessful login attempts associated with a first-
18 class login token, said series including more than the predefined number of unsuccessful
19 login attempts; and

20 instructions for providing the second-class login token if a login token is not
21 submitted with the login attempt, said login attempt not being permissible.

1 48. A computer program product for use in conjunction with a computer system, the
2 computer program product comprising a computer readable storage medium and a computer
3 program mechanism embedded therein, the computer program mechanism comprising:

4 instructions for processing a login token, if provided, during an attempt to login,
5 wherein the login attempt is impermissible if the login attempt occurs before expiration of a
6 first period of time following an unsuccessful login attempt associated with said login token;
7 and

8 instructions for providing an updated login token in response to the login attempt,
9 wherein the updated login token does not permit a subsequent login attempt before expiration
10 a second period of time if the login attempt is impermissible.

1 49. A computer system for processing login requests, comprising:

2 a first-class login server and a second-class login server, said first-class login server
3 and said second-class login server each including a storage unit and a processor, said storage
4 unit configured to store login information, said processor configured to process login requests
5 with reference to said login information;

6 the first-class login server and the second-class login server each configured to
7 process a login attempt to determine whether the login attempt is successful, said login
8 attempt being successful if permissible and submitted with a valid user name and password
9 combination;

10 the first-class login server configured to process login attempts made with a first-class
11 login token and the second-class login server configured to process login attempts made with
12 a second-class login token;

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13 the first-class login server and the second-class login server each further configured to
14 provide a first-class login token if the login attempt is successful, said first-class login token
15 permitting a predefined number of unsuccessful login attempts without imposing more than a
16 first time delay between each of said unsuccessful login attempts;

17 the second-class login server further configured to provide a second-class login token
18 if the login attempt is unsuccessful, wherein a subsequent login attempt made with said
19 second-class login token is impermissible if submitted prior to expiration of a second time
20 delay, said second time delay exceeding said first time delay; and

21 the first-class login server further configured to provide a second-class login token if
22 the login attempt is unsuccessful and the login attempt is the last of a series of unsuccessful
23 login attempts associated with a specific first-class login token, said series including more
24 than the predefined number of unsuccessful login attempts.

1 50. The computer system of claim 49, wherein
2 the second-class login server is further configured to serially process login attempts.

1 51. The computer system of claim 50, wherein
2 the second-class server is further configured to process login attempts at a defined
3 rate.

1 52. The computer system of claim 51, wherein
2 the second-class server is further configured to decrease the defined rate in response to
3 an occurrence of a set of unsuccessful login attempts.

1 53. The computer system of claim 51, wherein
2 the second-class server is further configured to decrease the defined rate if a defined
3 number of unsuccessful login attempts occur during a defined period of time.

1 54. The computer system of claim 53, wherein
2 the second-class server is further configured to increase the defined rate if the defined
3 number of unsuccessful login attempts do not occur during the defined period of time.

1 55. The computer system of claim 49, wherein
2 the first-class login server is the default login server such that all login attempts are
3 initially processed by said first-class login server, which is configured to redirect login
4 attempts made with a second-class login token to the second-class login server.

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